

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>2003P01955WO</b>	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. <b>PCT/EP2004/051272</b>	International filing date (day/month/year) <b>28.06.2004</b>	Priority date (day/month/year) <b>10.07.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>H04B7/26</b>		
Applicant <b>SIEMENS AKTIENGESELLSCHAFT</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>12</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>5</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																										
<p>4. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/051272

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1, 2, 4-14 as originally filed/furnished
- pages\* 3, 3a received by this Authority on 28.01.2005 with letter of 27.01.2005
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1-15 received by this Authority on 28.01.2005 with letter of 27.01.2005
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/4-4/4 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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## Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application☒ claims Nos. 6-11

because:

☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_  
are so unclear that no meaningful opinion could be formed (*specify*):☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.☒ no international search report has been established for said claims Nos. 6-11☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished☐ does not comply with the standard

the computer readable form

☐ has not been furnished☐ does not comply with the standard☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.☐ See Supplemental Box for further details.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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## Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ neither restricted the claims nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
  - ☒ not complied with for the following reasons:

See Supplementary Box.

4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-5, 12-15

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>2, 3, 4</u>	YES
	Claims	<u>1, 5, 12-15</u>	NO
Inventive step (IS)	Claims	<u>3, 4</u>	YES
	Claims	<u>2</u>	NO
Industrial applicability (IA)	Claims	<u>1-5, 12-15</u>	YES
	Claims	<u></u>	NO

## 2. Citations and explanations (Rule 70.7)

1. This report refers to the following documents:

D1: WO 01/20818 A (QUALCOMM INC), 22 March 2001  
(2001-03-22)

D2: WO 97/12489 A (PACIFIC COMM SCIENCES INC),  
3 April 1997 (1997-04-03)

2. INDEPENDENT CLAIM 1

The application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 1 is not novel (PCT Article 33(2)).

Document D1 discloses the following (the references in parentheses are to D1):

a method for synchronising a radio communication system divided up into radio cells, wherein data is transmitted using multiple access methods and each radio cell has a base station to provide radio coverage for a plurality of mobile stations assigned to the cell (page 9, lines 12 to 13); wherein in addition to mobile station signals from

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

its own cell, a base station also receives mobile station signals from neighbouring cells (obvious feature - mobile station signals are received from neighbouring cells automatically, without additional monitoring), and the base station uses the mobile station signals to determine a time synchronisation and/or frequency synchronisation value to which the base station synchronises itself (page 11, lines 23 to 34; page 14, lines 17 to 28); wherein in addition to base station signals from its own cell, a mobile station also receives base station signals from neighbouring cells (obvious feature - base station signals are received from neighbouring cells automatically, without additional monitoring), and the mobile station uses the base station signals to determine a time synchronisation and/or frequency synchronisation value to which the mobile station synchronises itself (page 10, lines 11 to 17).

4. DEPENDENT CLAIM 2

The features of dependent claim 2 are generally known in the art (see document D2). The resulting claim is therefore not inventive.

5. DEPENDENT CLAIM 5

Document D1 discloses the following (the references in parentheses are to D1):

a method for synchronising a radio communication

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

system divided up into radio cells, wherein to achieve synchronisation the base station and/or the mobile station readjust the carrier frequencies and time slot transmission points (page 11, lines 23 to 34; page 14, lines 17 to 28; page 10, lines 11 to 17).

The subject matter of claim 5 therefore also lacks novelty (PCT Article 33(2)).

6. DEPENDENT CLAIM 12

The application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 12 is not novel (PCT Article 33(2)). Since method claim 1 lacks novelty, the claim to the base station for carrying out the method of claim 1 also lacks novelty.

7. DEPENDENT CLAIM 13

The application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 13 is not novel (PCT Article 33(2)). Since method claim 1 lacks novelty, the claim to the mobile station for carrying out the method of claim 1 also lacks novelty.

8. DEPENDENT CLAIM 14

The application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 14 is not novel (PCT Article 33(2)). Since base station claim 12 lacks novelty, the claim to a radio

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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communication system characterised by at least one base station as per claim 12 also lacks novelty.

9. DEPENDENT CLAIM 15

The application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 15 is not novel (PCT Article 33(2)). Since mobile station claim 13 lacks novelty, the claim to a radio communication system characterised by at least one mobile station as per claim 13 also lacks novelty.

10. DEPENDENT CLAIMS 3 AND 4

The combination of features in dependent claims 3 and 4 is neither known from nor suggested by the available prior art.



## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

**Box IV****Lack of unity of invention**

The different inventions or groups of inventions are as follows:

Claims 1-5 and 12-15	Assignment of radio transmission resources
Claims 6 and 7:	Reduction of co-channel interference
Claims 8 and 10:	Multiplexing method
Claim 9:	Duplexing method
Claim 11:	Reduction of signalling overhead

For the following reasons these inventions or groups of inventions are not so linked as to form a single general inventive concept (PCT Rule 13.1):

The technical features of claims 1, 5 and 12 to 15 are already known from the prior art.

WO 01/20818 discloses a method for synchronising a radio communication system divided up into radio cells, wherein data is transmitted using multiple access methods and each radio cell has a base station to provide radio coverage for a plurality of mobile stations assigned to the cell (page 9,

## Supplemental Box

lines 12 to 13); wherein in addition to mobile station signals from its own cell, a base station also receives mobile station signals from neighbouring cells (obvious feature - mobile station signals are received from neighbouring cells automatically, without additional monitoring), and the base station uses the mobile station signals to determine a time synchronisation and/or frequency synchronisation value to which the base station synchronises itself (page 11, lines 23 to 34; page 14, lines 17 to 28); wherein in addition to base station signals from its own cell, a mobile station also receives base station signals from neighbouring cells (obvious feature - base station signals are received from neighbouring cells automatically, without additional monitoring), and the mobile station uses the base station signals to determine a time synchronisation and/or frequency synchronisation value to which the mobile station synchronises itself (page 10, lines 11 to 17); and wherein to achieve synchronisation the base station and/or the mobile station readjust the carrier frequencies and time slot transmission points (page 11, lines 23 to 34; page 14, lines 17 to 28; page 10, lines 11 to 17).

The special technical features (PCT Rule 13.2) are as follows:

Invention 1: Neighbouring base stations use radio transmission resources from a supply that is assigned to the base stations collectively for data transmission.

Invention 2: Co-channel interference at the base station and/or the mobile station is

## Supplemental Box

reduced by interference suppression methods; the base stations assign radio transmission resources so that co-channel interference in neighbouring radio cells is minimised.

Invention 3: An OFDM radio transmission method is used.

Invention 4: A TDD or FDD radio transmission method is used.

Invention 5: The radio communication system is synchronised without additional signalling using a higher protocol layer between the base station and the assigned mobile station.

The special technical features of the first invention allow effective radio resource management.

The special technical features of the second invention allow a reduction in co-channel interference.

The special technical features of the third invention allow high data rate multiplexing.

The special technical features of the fourth invention allow separation of transmissions into uplink and downlink directions, which is generally known.

The special technical features of the fifth invention allow synchronisation of the radio communication system without additional signalling.

## Supplemental Box

These features are not the same and do not correspond to each other, nor do they solve the same technical problem. The application therefore fails to meet the requirement of PCT Rule 13.2, and the subject matter of the five groups of inventions does not form a single general inventive concept.